3

Information as a Service

Moutusy Maity

Introduction

The Internet (accessed through various devices, including mobile phones, tablets, laptops, and home TV) is one of the channels that the consumer uses for undertaking information searches when deciding what product/service to purchase. The global e-commerce market is expected to grow to US$ 7.391 trillion by 2025 from US$ 5.542 trillion as of 2022 (Statista .com, 2022) (Fig. 3.1). E-commerce as a percentage of retail sales worldwide is expected to grow from 21% in 2022 to 24.5% by 2025 (Fig. 3.1b). Often, the Internet is the first channel of choice for many consumers to obtain information about a majority of products and services.

Information search on the Internet includes researching the web, which encompasses searching for information on specific websites, interacting with live agents (or chatbots) via live chat options on such websites, reading reviews, and interacting with company representatives or

M. Maity (✉)
University of Southampton, Southampton, UK
e-mail: m.maity@soton.ac.uk

J. N. Sheth et al. (eds.), *Customer Centric Support Services in the Digital Age*,
https://doi.org/10.1007/978-3-031-37097-7_3

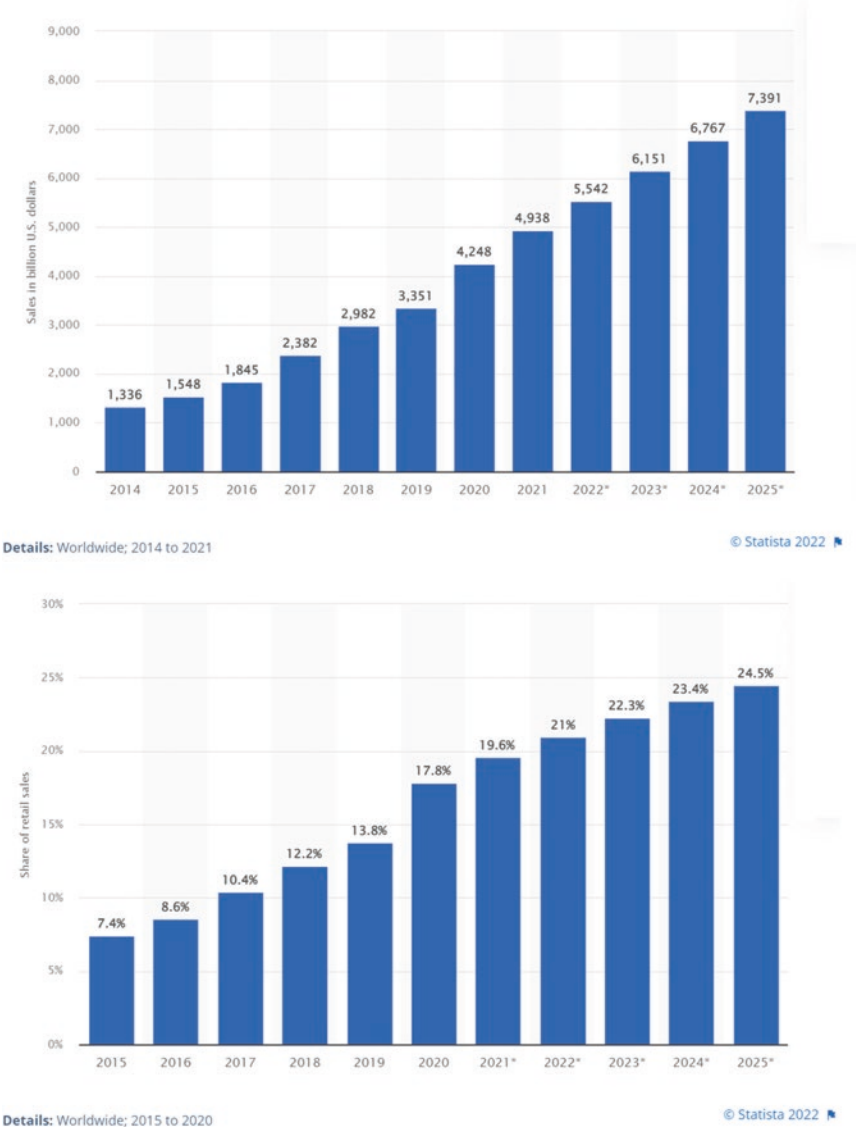

Fig. 3.1 (**a**) Retail e-commerce sales worldwide from 2014 to 2021 (with forecasts from 2022 to 2025). (Courtesy: https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/, last accessed on August 26, 2022. (**b**) E-commerce as a percentage of total retail sales worldwide from 2015 to 2020 (with forecasts from 2021 to 2025). (*Courtesy:* https://www.statista.com/statistics/534123/e-commerce-share-of-retail-sales-worldwide/, *last accessed on 26 August 2022*)

other consumers on social media forums. Therefore, it is not enough for website managers to ensure that consumers get to their websites. Additionally, they must ascertain that the consumer's experience with information search is fulfilling and rewarding when on the website. Given the Internet's importance in information search, marketers must use existing consumer/customer interaction channels to provide information that will aid consumer decision-making. In this context, channels providing customer service are poised to serve as conduits through which consumers can seek information.

Mini Activity 1
Think of a product or service that you are looking to purchase. How are you undertaking an information search for this product/service? What channels or touchpoints are you reaching out to obtain information? Is the kind of information you seek available through that touch-point? What challenges do you face as a consumer looking for the right information? What would be some suggestions that you would like to provide the company so that they improve how they make information available to consumers?

The Online Consumer: Decision—Making Process

Problem Recognition

The act of problem *recognition* typically occurs through a variety of possible routes. The consumer may recognise a need (or want) and then goes online to search for information regarding that product or service. For example, the consumer may purchase a laptop computer and may thus reach out to the company through different channels to fulfil the need for information. The problem recognition may manifest itself as the consumer interacts with content on the Internet (i.e., they may purchase a laptop after coming across an advertisement about that laptop computer or after reading some consumer reviews).

Information Search

Research suggests (e.g., Beatty & Smith, 1987) different variables that affect consumer information search, including *situational*, *potential payoff*, *knowledge and experience*, *individual difference*, *cost*, *market environment,* and *conflict and conflict resolution*. These factors determine the extent and amount of information searches undertaken by consumers.

Mini Activity 2
According to you, what factors might affect an individual's online information search? Make a list of factors that you think to affect your Internet use to search for information (for a product/service that you may wish to buy).

Evaluation of Alternatives

Information search leads to an enhanced understanding of consumer options in the marketplace. They are in a position to determine the consideration or evoked set (i.e. options that consumers are actively considering), the inert set (i.e. options may serve as possible consideration), and the inept set of products (i.e., options that are not considered at all – these are options towards which consumers are negatively disposed and are probably not going to consider these).

Choice

Once the user examines the available information, the consumer is ready to make a choice/purchase.

Post-Purchase

The post-purchase phase of the consumer decision-making process is where the customer evaluates the purchased product/service, which is often instrumental in deciding whether the user is likely to purchase the same product/brand again or not.

Customer Service and Support

Customer service is the support function companies/organisations offer customers before and after purchasing a product or service. The organisation needs to ensure that value is offered to customer service channels. Customer service may be enhanced by ensuring that customer service representatives serve existing and potential customers (i.e. general consumers) with any information need they may have.

Consumer decision-making has often been conceptualised as a five-step process. For example, the classical buyer decision-making process consists of *problem recognition*, *information search*, *evaluation of alternatives*, *purchase*, and *post-purchase* (Howard & Sheth, 1972; Engel et al., 1973; Nicosia, 1982). Typically, the consumers are subjected to marketing and other stimuli, after which they search for information and possibly make a purchase decision. In this chapter, we suggest ways organisations can address the information search needs of consumers through customer support service channels.

Customer Service and Customer Support Channels

Channels through which organisations provide service and support to consumers and customers include phone, e-mail, social media, company website, short messaging service (SMS), in-person or on-site support, and traditional mail. Service is probably one of the biggest drivers of loyalty today. Focusing on service is essential for building customer loyalty and driving business growth. Consumers expect brands to provide support (including information) through the entire journey of information search post-purchase and beyond.

One must reconceptualise the channels mentioned above to serve as those that provide functional and technical information and support. Often, customer service is expected to be available for help throughout the entire customer journey; customer support, on the other hand, is usually restricted to mean technical help (e.g. installation, troubleshooting). While that has been the traditional approach, how can each channel identified here help consumers during the information search stage, and

how will that benefit the organisation? Each of these channels can provide information to consumers/customers throughout the purchase journey:

Social media: Organisations may use different social media platforms (i.e. Twitter, Facebook, and Instagram) to respond to questions and requests for information (in addition to resolving customer complaints). The accessibility that social media provides to a consumer offers one of the leading ways in which consumers may contact a brand at any time (i.e. 24 × 7). This channel can be a cost-effective way for organisations to address consumers' information needs and direct them to specific resources as required.

Chatbots: Online chat agents are used by organisations on websites to offer consumers an opportunity to quickly resolve their queries by the chatbot itself or be directed to a customer service representative, if required. The chatbots may be trained to respond to frequently asked questions, while more complex questions may be directed to a human agent. The provision for automating conversations with consumers is a way of providing information around the clock and is cost-effective.

Frequently Asked Questions (FAQs): Preparing a section on the website that provides answers to frequently asked questions (FAQs) is an essential feature which can double up as a source of information (in addition to resolving complaints). Since a service rep need not be involved, consumers can easily receive the required information. FAQs may be used for providing both functional and technical information. For example, FAQs may be useful for providing technical information through do-it-yourself (DIY) and product videos. Such videos may serve as a source of general information and installation-related (or other technical) information.

Phone: While speaking with a customer service representative is often comforting and engenders trust, reaching out to a service representative for information may not always be possible for the organisation to arrange for, since the costs are high. However, complex queries and explanations by a customer service rep may help some consumers obtain the necessary clarification before purchasing. An interactive

voice response (IVR) menu may be used to address general queries. In contrast, artificial intelligence (AI) – the driven choice – may assist in answering common questions and then route the call to a customer service representative as required.

SMS/Mobile: Customer service messages are often sent via SMS. Such a service may also be used as a channel for providing information to consumers. Many organisations have also established phone numbers that may be reached via WhatsApp. Such access often provides an alternative to IVR menus offered over the phone.

Email support: This support channel remains one of the most-used options for newsletters and service redressal. E-mail support can also provide information to consumers seeking information in the pre-purchase stage. Consumers often prefer E-mails as they can be customised, and consumers can explain their queries and concerns clearly.

In-person (Or traditional in-store): Speaking with a live human being is undoubtedly the best experience that a person may have for addressing customer queries. Such service can be provided to consumers, which makes it easy for them to learn about the product/service and for customer service representatives to build customer relationships.

The Role of Customer Service Throughout the Consumer Journey

As the consumer moves from one stage of decision-making to the other, organisations/companies must reach consumers just when they are likely to decide or choose a product/service. For example, a decade and a half ago, Amazon.com began offering targeted product recommendations to consumers logged in and ready to buy. With the mobile channel (i.e. apps, mobile browser), the consumer may navigate several channels before making a purchase decision online (i.e. through mobile or e-commerce). Media consumption is fragmented and attention spans are low. In addition to essential, the customer expects the company to respond (across various channels) even before a purchase is made. Insight 3.1 discusses ways in which marketers can gain a customer.

Insight 3.1
How can marketers ensure that the consumer begins and ends their journey?

(a) Reach the consumer when the consumer is searching for solutions. For example, in 2015, Google introduced the concept of micro-moments, which are specific opportunities that may be identified as instances when consumers are looking to fulfil a need (i.e. the consumer is searching on the Internet to 'learn' or 'do' or 'discover' or 'watch' something). The marketer may undertake behavioural targeting to identify what kind of behaviour may be targeted with what kinds of offers.
(b) E-commerce companies may wish to adopt a *mobile-first strategy* as research demonstrates that accessing the Internet through a mobile device often supersedes access through the desktop environment in India.
(c) E-commerce companies and other websites must recognise that the consumer may often move back and forth between mobile and tablet/laptop/desktop environments during the decision-making phase (i.e. information search, evaluation of alternatives, and purchase/choice). The marketer needs to identify mechanisms that will allow the marketer to be present across all channels.
(d) Consumers look for more interaction with the company before purchasing. Through their research, according to McKinsey (2009), marketers must come up with fresh strategies to include their brands in the initial consideration set that customers form when they start their decision-making process. Additionally, marketers need a more organised manner to meet client expectations and handle word-of-mouth due to the shift away from one-way communication or from marketers to consumers, towards a two-way interaction.

Voice of Customer (VoC) Programme

As the consumer moves from one stage of decision-making to the other, it is imperative for organisations/companies to ensure that consumers get the required information throughout the decision-making process and just when they are likely to make a decision or choice about a product/service. A Voice of Customer (VoC) programme allows a company to find out what customers need, what customers expect from a company, and what customers' interests and behavioural patterns are; an analysis of such data allows the company to undertake steps to address consumer/customer needs and figure out how the company may help them.

A VoC programme t allows an organisation to collect customer feedback, provide much-needed information on business and product/service, and offer customer insights that can be leveraged to create a strong customer experience. The focus of such a programme has been to ensure continuous improvement of customer experience. We offer that the information collected through this programme can also be used to provide information to consumers when they are looking for information at every stage of the decision-making process. Figure 3.2 presents the changing realities for the marketer.

The following methods are often employed to collect consumer/customer feedback about products/services and can then be used to obtain and keep up-to-date the information that consumers may require during the information search stage and can be provided to consumers through channels identified in section "Customer Service and Customer Support Channels":

Customer Interviews, Focus Group Discussions Consumer/customer interviews have always been conducted by organisations to understand user behaviour and the user's point-of-view regarding the product/service. Interviews may be held in person or online. In-depth interviews are undertaken where a single person converses with a representative/interviewer and elaborates on the issue. Such engagements allow the organisation to understand user needs and expectations. Similarly, focus group discussions can be held to obtain similar insights.

Fig. 3.2 Marketing research and marketing analytics. (*Courtesy: Author*)

Customer Surveys Consumer/customer surveys may be given out for user participation online or offline. Such surveys are usually structured (i.e. include close-ended questions) but may also include open-ended questions. An understanding of customer experience and satisfaction is often collected through customer surveys. Feedback forms may be provided to obtain open-ended feedback about specific aspects of customer experience and expectations. Such surveys include recently undertaken transactions, relationship surveys (i.e. undertaken regularly), and satisfaction surveys.

Social Media While consumers/customers easily access social media channels, companies/organisations have little control over what is said or posted by consumers/customers on these channels. This nature of user interaction and posting of content on social media by users may sometimes pose challenges for companies/organisations, as the content posted might not be favourable toward the organisation. However, this allows organisations to unobtrusively listen to consumer/customer conversations and learn about them. Service redressal opportunities often present

themselves through such conversations. At the same time, the insights obtained may be used to devise strategies for improving products and services. The information obtained through such social listening (i.e. learning about consumer expectations and needs) can also be used to understand the kind of information consumers require during the information search stage; such information can be made available across various channels discussed in section "Customer Service and Customer Support Channels". The content posted by users is usually unstructured (i.e. text, emojis, audio, video), which may be analysed (text mining, image analytics) to obtain the necessary information.

Live Calls/Chat Such chat may be undertaken on the organisation's website, social media, and live calls. Once again, these are sources of consumer insights and can be used to update FAQs and other channels that provide consumers with information.

Consumer/Customer/User Behaviour on the Website User behaviour obtained through web analytics provides a wealth of information about user activities on an organisation's website (i.e. new/existing visitors, important keywords, geographies from which users are visiting the website, the popular pages that users are visiting on the website, the pages on which visitors are spending more time on, the pages from which people are bouncing, the queries generated, through the search box on the website, amongst many others). This information can be an invaluable source to understand users' information needs, which can then be updated and adequately maintained.

Online Customer Reviews Besides social media platforms, users post their product reviews and ratings on platforms dedicated to reviews/ratings. Insights from such platforms may be used to strengthen the information resources that the organisation maintains and aid in the information search stage of consumers.

E-mail Communication E-mail-based communication has often served as a channel through which users/consumers provide feedback to organisations. The learnings obtained from such feedback/complaint may be

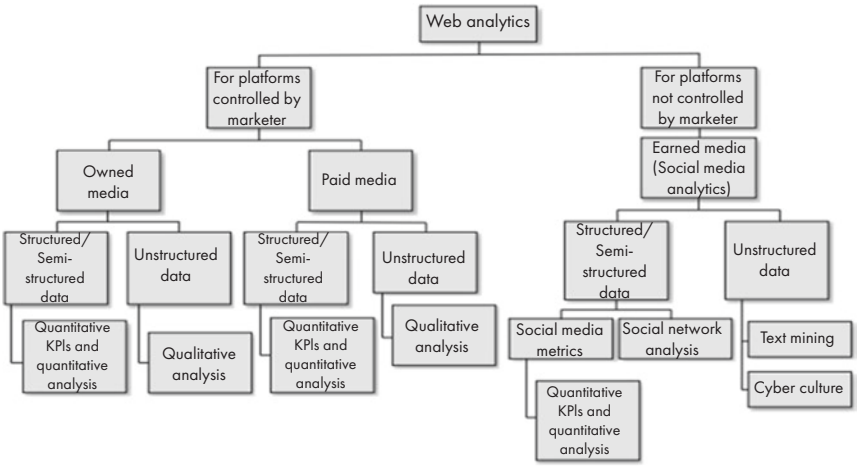

Fig. 3.3 Paid, owned, and earned media in the digital context. (*Courtesy: Author*)

used to update the information databases maintained by the company and make that available to consumers as and when needed, especially during the information search stage.

The organisation must ensure that information is collected through paid, owned, and earned media. This can then be used to power resources provided at the various stages of the marketing funnel. A representative set of data sources are identified in Fig. 3.3.

Obtaining Consumer Insights

The data obtained from the above-discussed methods can be processed using machine learning (ML) techniques to obtain insights that inform users in the various marketing funnel stages (as discussed in section "Information Search and the Marketing Funnel").

While machine learning is based on the idea that machines should be able to learn and adapt through experience, AI refers to a broader idea where machines can execute tasks 'smartly'. Artificial Intelligence applies machine learning, deep learning, and other techniques to solve problems. Machine-learning techniques have been widely adopted in the corn

products, such as IVR menus (i.e. consumers speak with or interact through keyboard options or digital diaries that remind users of certain tasks (i.e. personalising content based on the user's behaviour). Such applications are learning systems that have been provided with a large dataset of desired input-output behaviour (i.e. training data) and are optimised to predict outputs on a similar dataset that was not part of the training dataset (Jordan & Mitchell, 2015). Some commonly used types of algorithms in machine learning are discussed in this section.

Supervised Learning Supervised learning is a subcategory of machine learning and artificial intelligence. The defining characteristic of supervised learning is that labelled datasets are used to train algorithms to classify or predict outcomes. Supervised learning methods are the most prominent machine-learning methods used in practice. A few popular algorithms are widely used in supervised learning methods, including logistic regression, gradient-boosting decision trees (GBDT), and deep learning.

Unsupervised Learning Unsupervised machine learning is another subcategory of machine learning that comprises methods where input data is provided without any specific output data. This type of machine learning aims to uncover patterns in the dataset that has been provided – such patterns are usually unknown to the researcher before the process. A few often-used unsupervised learning methods include principal component analysis (PCA) (i.e. a technique that reduces a large number of variables to a handful of features) and clustering methods used to group and segment the given data.

Reinforcement Learning Input data in reinforcement learning provide certain signals that require the algorithm to devise a course of action or suggestions that allow it to score the best possible grade. The input data does not provide any clear output signal. The model keeps improving based on the reinforcement it receives from the models developed in the interim. Since properly labelled data is not available, the procedure of reinforcement learning is computationally intensive. It is difficult to build algorithms that can learn signals in noisy environments (given the

lack of clearly labelled outputs) (Chen et al., 2018). A common application for reinforcement learning is ad content optimisation. For example, researchers from the Baidu search engine discovered that search quality could be improved by using deep reinforcement learning to optimise the content of ads shown to its users (Fei et al., 2019).

These machine-learning techniques must be applied to structured and unstructured data (as appropriate) to make predictions or recognise patterns from that data such that the information is useful to consumers, which may be provided at the different stages of the marketing funnel to serve consumer information search needs.

Information Search and the Marketing Funnel

As the consumer moves from one stage of decision-making to the other, organisations/companies must reach consumers just when they are likely to decide or choose a product/service. Figure 3.4 represents the funnel

Fig. 3.4 Providing users with much-needed information tunnel (TOFU), Middle of the Funnel (MOFU), Bottom of the Funnel (BOFU). (Courtesy: https://www.pixelme.me/blog/marketing-funnel (Last accessed on 5 Sept 2022))

through which a user moves as she evolves into an interested buyer. The figure also identifies sources that may act as conduits providing users with much-needed information.

It is important for the organisation to carefully use a mix of human agents and chatbots in interacting with consumers (and providing them with the required information) at the different stages of the marketing funnel. The top of the funnel usually creates awareness and interest. At this stage, a mix of blog articles, videos, engagement on social media, and advertisements are likely to work towards creating awareness and engagement. For those users seeking information at the top of the funnel, organisations can use AI-driven chatbots to interact with consumers in providing them with information. The deployment of chatbots at this stage is useful since the queries that consumers have when starting the information search process are likely to be fairly simple; human customer service representatives may not be required for such simple transactions, thus making the use of chatbots attractive and cost-effective. Chatbots can be deployed 24 × 7, are much faster than a human agent, and are easily scalable. It should also be noted that this strategy may be successful for organisations where many e-queries are received. The success of this strategy is likely to depend on the extent and quality of training undertaken to create the chatbots.

While many positives are associated with using automated response systems, there are several limitations. First, since chatbots can handle interactions that follow a fairly straightforward 'script', low versatility is expected, and they are not suited for handling complex queries. Therefore, while chatbots are efficient in some cases, their effectiveness in handling queries, especially at the middle and bottom of the funnel, remains to be seen. In addition, chatbots are likely to be low in relational intelligence, which may impede carrying out complex transactions and answering complex information queries. Finally, chatbots must be used, so the organisation knows the common complex queries passed on to human agents or other information sources (e.g. websites, rating and review sites, and consumer forums).

Other sources can provide information as forums or move through the marketing funnel, as identified in section "Customer Service and Customer Support Channels" and illustrated in Fig. 3.4.

Knowledge Management System

In recent years, many organisations have started deploying Knowledge Management Systems (KMS) that help customer service representatives find and provide the right and pertinent information to consumers who raise such queries. KMS is an information management system that follows the practice of creating, putting together, and sharing/distributing relevant and actionable content; such content is made available to customer-facing teams, such as support agents, field staff, retail stores, and other partners. It also includes digital channels, such as chatbots, help portal pages, social media, and support community. The attempt is to create a unified platform that makes it easy to find the right information at the right time across all the channels through which users seek information. Deployment of AI and ML, along with using of natural language processing (NLP) technologies, allows us to obtain insights from the data collected through the VoC programme that contributes to the KMS.

To deliver a delightful experience, customer service representatives must be empowered with information that allows them to help the consumers so that the consumer may be in a position to take an informed decision. While implementing digital innovations, including chatbots or virtual customer assistants, having a KMS provides a constant supply of information to the digital assets is indispensable. In addition, human agents must be aware of new updates and products, likely to lead to higher consumer interest in the product/service.

A KMS is likely to increase the overall productivity and efficiency of human agents, reduce the average number of minutes for resolving consumer queries, increase customer satisfaction (C-SAT) scores and net promoter scores (NPS), help consumers with faster and more accurate decision-making, and easily locate information within the KMS. However, KMS is not a one-time activity and requires constant information that needs to be provided.

Privacy

Issues related to online privacy and data protection have a variety of ethical and legal ramifications associated with them. Issues range from the tracking of user behaviour, data collection, nature, and quality of information (or whether it is misinformation or disinformation), user data application, and data storage. Therefore, it is important that managers need the practices associated with those mentioned above acceptable and somewhat questionable processes. What are some best practices in these contexts? Are there statutes that are laid down by the law? In case there are no legal requirements, what practices are (un)ethical?

Informed Consent: Collecting Data from Users/Consumers

Many companies, notably those that have to communicate with several target audiences, view market research as a crucial part of their marketing strategy. The results of this kind of research are frequently used to guide strategy, guide resource allocation, and assist brands in understanding and engaging with their target audience in a variety of ways. A nearly century-old technique is gathering information from customers of a brand or product to understand their attitudes.

The user or customer, the research company, and other businesses or organisations who claim to employ the research's findings are generally the three stakeholder groups involved in the procedures involved in data collecting and utilisation. There is an implicit understanding that the research firm will promise to protect the data collected from the user/consumer (i.e. protect the identity and privacy of the user/consumer), which is occasionally made explicit by contracts signed amongst the stakeholder groups in this data collection, analyses, and reporting process. Users of a product or brand who give their agreement to the company collecting the data typically have faith in the organisation and want their identity and sensitive personal information to be preserved. Consumers are frequently given the assurance that the results would be provided in aggregate form and that their personal information won't be

shared with outside parties. Typically, these businesses are expected to adhere to particular standards for data storage and utilisation. Similar to this, data collection organisations may also observe consumers, but the implicit promise – or the norm – of data usage stays the same.

All of the aforementioned began in a world where users frequently had to explicitly give consent and participate in the data collection process, which is still the case in the context of offline data collection. However, the digital channels and the enthusiastic adoption of these channels by the majority of users and consumers worldwide have made granular data collection regarding users and consumers a seamless and unobtrusive process for firms generally. Companies that only exist online must compel customers to take actions on their websites in order to fulfil their brand and business promises. The brand promise is frequently to provide unparalleled reach and connections by exploiting and implementing information and communication technology by the company and the user, as on many social networking websites.

These businesses can tap into a vast ecosystem of methodologies and tools to obtain an increasingly comprehensive view of the user by capturing each click made, archiving every word ever written, and noting every image posted on their websites today thanks to the abundance of tools and methodologies available to these firms that operate in the virtual domain. Additionally, businesses today use communications, social listening, and semiotics to comprehend how customers respond to media and brand messages. These businesses include online social networks and retailers.

Ethics of Data Collection from Users/Consumers and Use of Data

Ethics (or moral philosophy) is a branch of philosophy that includes identifying, defending, and recommending desirable behaviour instead of wrong or undesirable). The English word 'Ethics' is derived from the Greek word *ethos*, meaning 'character, moral nature'. Very broadly speaking, ethics are shared values; ethics are not laws. However, ethics differentiate right from wrong and can be the basis for laws.

The transition from overt to covert tracking of individual behaviour is the key change in data collection. The topic of whether the standards (and even laws) governing the use of data by businesses must alter in light of evolving data collection technologies must therefore be posed and investigated. Understanding the incentives that drive normative behaviour around data use is of particular relevance to business stakeholders and society at large in the context of the use of information technology by enterprises to connect with their consumers.

Users and customers of online stores, virtual social networking sites, and virtual social networking sites are frequently aware that businesses frequently monitor their online behaviour. Do the users find this Panopticon view of themselves disturbing? Maybe a little, but not enough to have consumers quit utilising these business websites, and consequently, the range of potential actions that these websites enable. Consumers frequently don't realise that businesses other than the proprietors of these websites are collecting this data; these businesses are referred to as 'third-party firms' or simply 'partners'. The data collection procedure is often highly technological, making it difficult for the user to know who is collecting their data. Additionally, the owner websites and affiliated businesses are frequently in charge of disclosing the consumer data gathered and making it accessible to other client organisations that may now utilise this data for direct engagement with the customers. Clearly, the user had not consented to this usage of their data.

It appears that there are some differences in how businesses acquire and use data about online user activity and how they do so for offline user activity. The standards governing the gathering and use of data collection and users typically depend on certain defined standards by businesses, most of which are driven by self-regulation and call for the participant's informed consent. The sharing and dissemination of that data faced substantial hurdles even though technically a data collection agency in the pre-Internet era – and data collected offline today – might share the collected data with partner companies. Typically, data is gathered using the old-fashioned pen and paper method, and it only offers insights into the consumer in terms of the questions that were posed to them. Data can now be collected and used in soft formats in the post-Internet era. These data can often yield specific insights about the user, who is typically the

users. To learn more about user behaviour, questions are typically asked, unstructured data is gathered, and data mining techniques are then used. Client organisations find the granularity of the data to be particularly appealing because they frequently use these user-specific insights to micro-target their messaging and communications.

These data collecting and usage realities about the inhabitants of the virtual world, which have been brought to light by social media platforms and their partner organisations, suggest that a self-regulatory strategy is both desirable and unlikely to succeed. It is probably necessary to take a stricter stance on this matter in accordance with specific regulations that may be required by authorities. It is likely necessary to revisit the standards that governed data gathering and usage in the years before the Internet as legally required and thoroughly regulated procedures. Although many have expressed the necessity for such a mandate, including the governments of several nations, it is not simple to trace the virtual data trail of pure-play businesses.

For example, unsolicited email – or spam – as it is referred to today, began in the 1990s and was considered an acceptable way of reaching the target audience. However, that position has changed over the last decade, and any company sending out commercial e-mail messages needs to identify itself as a sender (i.e. the business name and address), there should be a clear and easily available unsubscribe option, and if a consumer chooses that option, then the business must respect this (e.g. CAN-SPAM Act 2003 (USA)). While there is probably a social consensus that spam is bad, many unsolicited emails exist. There is also much technology devoted to trying to control spam. However, most companies do not want to be seen as spam.

Another example of users being subject to unsolicited data collection procedures that they were unaware of is the study that Facebook conducted in the year 2014, where the social media website manipulated the News Feeds of more than 650,000 users (Forbes.com, 2014) to induce specific emotions in the participants; the social media company claimed that it wanted to study user/participant emotion contagion. This kind of experimentation was not well-received by users of Facebook. Managers must note that while much of the work that data scientists do have the

potential to deliver, a set of shared ethical values is necessary if companies wish to reap the benefits of data science. When put into practice, such values can minimise the harm that such data collection and analysis fictionalises to individuals and society.

To enforce the mechanism of informed consent, participants must be aware before the data collection takes place – i.e., the consent has to be prospective; consent obtained retrospectively (i.e. after the data has been collected) is usually not acceptable.

What Is Data Privacy?

Such practices, as noted above, give rise to questions of data ownership, data control and copyright, and deployment/use, storage and disposal of the collected data. For example, who is the owner of the collected data? The company that has collected the data? Does an individual owner have any control over this data?

Privacy is the ability of an individual or group to seclude themselves or information about themselves and thereby express themselves selectively. When something is private to a person, it usually means that something is inherently special or sensitive to them (see Insight 3.2).

Insight 3.2

'Privacy is a value so complex, so entangled in competing and contradicting dimensions, so engorged with various and distinct meanings, that I sometimes despair whether it can be usefully addressed at all' – Robert C. Post

Data sourced from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5124066/

https://openyls.law.yale.edu/bitstream/handle/20.500.13051/1114/Three_Concepts_of_Privacy.pdf?sequence=2&isAllowed=y

'Perhaps the most striking thing about the right to privacy is that nobody seems to have any very clear idea what it is.' – Judith Jarvis Thomson

Data sourced from:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5124066/

https://www.jstor.org/stable/2265075

Privacy concerns must be addressed in the context of data collected about users on the online channel (e.g. Big Data). How do managers ensure value is obtained from the data while avoiding the possible negative effects? What are some trade-offs that managers must be aware of? For example, when people put content on social media (e.g. Instagram, Facebook, YouTube, Twitter) for public consumption, are they aware that their data is being tracked? Users/consumers have disclosed this information of their own accord on a public forum. Should this be considered public data or private data? In addition, companies can make many deductions about individuals based on the data they collect about them. Given this context, managers must understand how user/consumer privacy may be managed.

Some managers/researchers think that since the data has been posted on a public platform, the data is public, the data is a public good that may be used, and the data can be used to make better products and services. On the other hand, another school believes that it is difficult to distinguish between public and private data; using data without the user's consent violates user privacy.

Data Validity

While data can be collected from users, used for understanding user behaviour and for training algorithms that undertake various tasks (i.e. based on machine learning and artificial intelligence), the validity of such data needs to be ensured. It is important to understand some of the reasons that may contribute to errors in data analyses, such that the error may have undesirable and grave consequences. For example, errors may be in the data itself or how the data is used in the analysis contributes to training the algorithm. Data with errors and models built on faulty premises (e.g. an unrepresentative data training set, a small sample size of data) is likely to lead to undesirable decisions. For example, say a company needs to build a predictive model for users over 60 years of age, but the data for the predictive model is based on the data of teenagers. Such a

mismatch in the data required to build the predictive model may have disastrous consequences. As another example, take the case of specific behaviour (e.g. complaints regarding a product or service) exhibited by people who use Twitter. Is such behaviour representative of the population as a whole? A little attention to the demographics and other characteristics of Twitter users is likely to reveal that Twitter users have specific characteristics that are not representative of the population as a whole. The complaints may be legitimate in the second example, revealing a population segment. Therefore, paying attention to this issue (that only Twitter users have raised) is important.

Similarly, sentiment analyses involve dependency on natural language processing (NLP) dictionaries, which may be limited (e.g. only English dictionaries). Comments example, comments on social media by users from India may be a mix of English, Hindi, and a vernacular language. The extent of extracting meaning from the data will depend on the dictionaries used. Therefore, there may be errors in processing this data. Of course, there are other errors as well (i.e. human and subjective errors), which include data entry errors. As another example, how does one ensure that the information on the Internet is reliable, not misinformation or disinformation? False information (regardless of intent to harm or deceive) is *misinformation*, while information created and disseminated with the intent of deceiving or causing harm is *disinformation*. Disinformation may be regarded as a subset of misinformation.

In sum, data collection and analyses are not value-neutral processes. Just because the data collection is automated and algorithms undertake analyses and predictions, managers should not assume that the data is free of biases. Faulty results may be obtained due to low-quality data and questionable modelling techniques. Decisions made on such results may harm individuals and society in general. Therefore, managers need to understand the processes (data collection and analyses) and try and avoid pitfalls.

References

Beatty, S. E., & Smith, S. M. (1987). External search effort: An investigation across several product categories. *Journal of Consumer Research, 14*(1), 83–95.

Chen, J., Chen, J., Chao, H., & Yang, M. (2018). Image blind denoising with generative adversarial network-based noise modelling. In *Proceedings of the IEEE conference on computer vision and pattern recognition* (pp. 3155–3164).

Engel, J. F., Kollat, D. T., & Roger, D. (1973). *Blackwell, consumer behavior*.

Fei, H., Li, X., Li, D., & Li, P. (2019, July). End-to-end deep reinforcement learning based conference resolution. In *Proceedings of the 57th annual meeting of the Association for Computational Linguistics* (pp. 660–665).

Forbes. (2014, June 28). *Facebook manipulated 689,003 users' emotions for science*. https://www.forbes.com/sites/kashmirhill/2014/06/28/facebook-manipulated-689003-users-emotions-for-science/?sh=3308cfe7197c

Howard, J. A., & Sheth, J. N. (1972). The theory of buyer behavior. *New York, 63*, 145.

Jordan, M. I., & Mitchell, T. M. (2015). Machine learning: Trends, perspectives, and prospects. *Science, 349*(6245), 255–260.

McKinsey & Company. (2009, June 1). The consumer decision journey. https://www.mckinsey.com/capabilities/growth-marketing-and-sales/our-insights/the-consumer-decision-journey

Nicosia, F. M. (1982). *Consumer decision processes: A futuristic view*. ACR North American Advances.

Statista. (2022, September 28). *E-Commerce worldwide*. https://www.statista.com/topics/871/online-shopping/#topicOverview